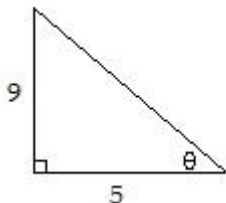


Chapter 8 and 9 Spiral Test Review

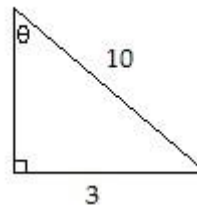
ALL PROBLEMS MUST BE DONE ON SEPARATE PAPER OTHERWISE; THE REVIEW WILL NOT BE GRADED. SHOW ALL WORK FOR CREDIT. REVIEW IS DUE ON TEST DAY.

Find the value of the indicated trigonometric function of the angle θ in the figure. Give an exact answer with a rational denominator.

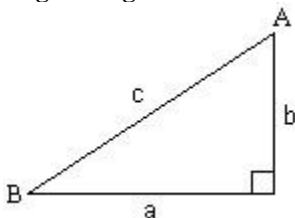
1) Find $\sin \theta$.



2) Find $\cos \theta$.



Solve the right triangle using the information given. Round answers to two decimal places, if necessary.



3) $a = 5, c = 6$; Find $b, A,$ and B .

Solve the problem.

4) A photographer points a camera at a window in a nearby building forming an angle of 42° with the camera platform. If the camera is 52 m from the building, how high above the platform is the window, to the nearest hundredth of a meter?

5) A twenty-five foot ladder just reaches the top of a house and forms an angle of 41.5° with the wall of the house. How tall is the house? Round your answer to the nearest 0.1 foot.

Solve the triangle.

6) $B = 10^\circ, C = 50^\circ, a = 5$

Two sides and an angle are given. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.

7) $a = 5, b = 4, B = 15^\circ$

8) $A = 30^\circ, a = 21, b = 42$

Solve the problem.

9) To find the distance AB across a river, a distance BC of 956 m is laid off on one side of the river. It is found that $B = 106.8^\circ$ and $C = 15.6^\circ$. Find AB. Round to the nearest meter.

Solve the triangle.

10) $a = 6, b = 14, c = 16$

Solve the problem.

11) Two points A and B are on opposite sides of a building. A surveyor selects a third point C to place a transit. Point C is 46 feet from point A and 73 feet from point B. The angle ACB is 49° . How far apart are points A and B?

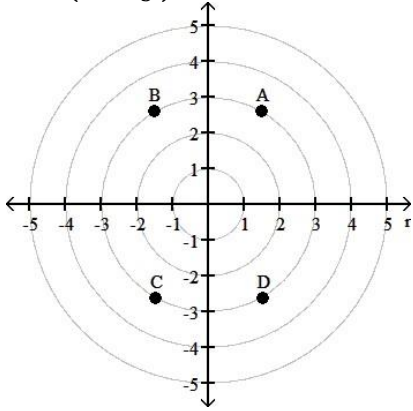
Find the area of the triangle. If necessary, round the answer to two decimal places.

12) $A = 83^\circ, b = 9, c = 6$

13) $a = 12, b = 14, c = 16$

Match the point in polar coordinates with either A, B, C, or D on the graph.

14. $\left(-3, \frac{7\pi}{3}\right)$ 15) $\left(-3, \frac{4\pi}{3}\right)$



Plot the point given in polar coordinates.

16) $\left(2, -\frac{\pi}{4}\right)$

17) Plot the point $\left(4, \frac{5\pi}{6}\right)$ and find other polar coordinates (r, θ) of the point for which:

- (a) $r > 0, -2\pi \leq \theta < 0$
- (b) $r < 0, 0 \leq \theta < 2\pi$
- (c) $r > 0, 2\pi \leq \theta < 4\pi$

18) Plot the point $\left(3, \frac{3\pi}{4}\right)$ and find other polar coordinates (r, θ) of the point for which:

- (a) $r > 0, -2\pi \leq \theta < 0$
- (b) $r < 0, -2\pi \leq \theta < 0$
- (c) $r > 0, 2\pi \leq \theta < 4\pi$

The polar coordinates of a point are given. Find the rectangular coordinates of the point.

19) $\left(-9, \frac{2\pi}{3}\right)$

The rectangular coordinates of a point are given. Find polar coordinates for the point.

20) $(0, -3)$ 21) $(3, -3)$

The letters x and y represent rectangular coordinates. Write the equation using polar coordinates (r, θ) .

22) $x^2 = 4y$ 23) $y = 5$

The letters r and θ represent polar coordinates. Write the equation using rectangular coordinates (x, y) .

24) $r = 2(\sin \theta - \cos \theta)$ 25) $r \sin \theta = 10$

Identify and graph the polar equation.

26) $r = 1 + \sin \theta$ 28) $r = 4 - 5 \cos \theta$ 31) $r^2 = 9 \cos(2\theta)$
 27) $r = 5 - 4 \sin \theta$ no problem 29 or 30! 32) $r = 2 \cos(2\theta)$

The vector \mathbf{v} has initial position \mathbf{P} and terminal point \mathbf{Q} . Write \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$; that is, find its position vector.

33) $\mathbf{P} = (-6, 1); \mathbf{Q} = (4, -4)$

Solve the problem.

34) If $\mathbf{u} = 2\mathbf{i} - 5\mathbf{j}$ and $\mathbf{v} = 4\mathbf{i} + 9\mathbf{j}$, find $\mathbf{u} + \mathbf{v}$. 35) If $\mathbf{w} = 8\mathbf{i} + 4\mathbf{j}$, find $2\mathbf{w}$. 36) If $\mathbf{v} = 6\mathbf{i} + 8\mathbf{j}$, find $\|\mathbf{v}\|$.

Write the vector \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$, given its magnitude $\|\mathbf{v}\|$ and the angle α it makes with the positive x -axis.

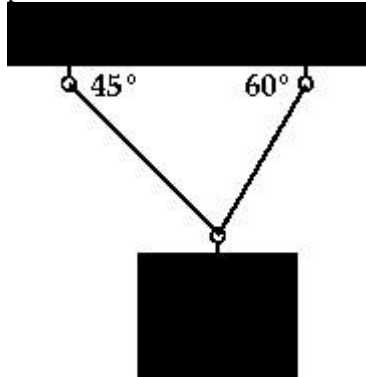
37) $\|\mathbf{v}\| = 3, \alpha = 60^\circ$

Find the direction angle of the vector \mathbf{v} . Round to the nearest tenth if necessary.

38) $\mathbf{v} = -4\mathbf{i} + 4\mathbf{j}$

Solve the problem.

39) A box of supplies that weighs 1750 kilograms is suspended by two cables as shown in the figure. To two decimal places, what is the tension in the two cables?



Find the dot product $v \cdot w$.

40) $v = 7i - 4j$, $w = 8i + j$

Find the angle between v and w . Round your answer to one decimal place, if necessary.

41) $v = 8i + 6j$, $w = 4i + 9j$

State whether the vectors are parallel, orthogonal, or neither.

42) $v = 3i + j$, $w = i - 3j$

Solve the problem. Round your answer to the nearest tenth.

43) A person is pulling a freight cart with a force of 49 pounds. How much work is done in moving the cart 100 feet if the cart's handle makes an angle of 21° with the ground?